

WE CLAIM:

1. An electric power meter, comprising:  
means for digitally sampling voltage and current;  
means for storing said digitally sampled voltage and current;  
means for performing power calculations upon said digitally sampled voltage and current, and converting said calculations and said digitally sampled voltage and current into at least one network protocol; and  
means for interfacing with an external network;  
wherein said network protocol is one of e-mail, File Transfer Protocol (FTP), Hypertext Transfer Protocol (HTTP) or Dynamic Host Configuration Protocol (DHCP).
2. The electric power meter of claim 1, further comprising means for providing data in Hypertext Markup Language (HTML) or Extensible Markup Language (XML) format.
3. The electric power meter of claim 1 further comprising:  
means for connecting an external device to said electric power meter, wherein said external device transmits packet data to said electric power meter to be processed by the processor and provided through said interfacing means.
4. The electric power meter of claim 1, wherein said interfacing means further comprises means for interfacing with multiple users simultaneously.
5. The electric power meter of claim 1, wherein said interfacing means supports Ethernet communications.
6. An electric power meter, comprising:  
means for digitally sampling voltage and current;  
means for storing said digitally sampled voltage and current;  
means for performing power calculations upon said digitally sampled voltage and current, and converting said calculations and said digitally sampled voltage and current into at least one network protocol;  
means for interfacing with an external network; and

means for providing data in Hypertext Markup Language (HTML) or Extensible Markup Language (XML) format.

7. The electric power meter of claim 6 further comprising:  
means for connecting an external device to said electric power meter, wherein said external device transmits packet data to said electric power meter to be processed by the processor and provided through said interfacing means.
8. The electric power meter of claim 6, wherein said interfacing means further comprises means for interfacing with multiple users simultaneously.
9. The electric power meter of claim 6, wherein said interfacing means supports Ethernet communications.
10. An electric power meter, comprising:  
a digital sampler for digitally sampling voltage and current;  
a memory for storing said digitally sampled voltage and current;  
at least one processor for performing power calculations on said digitally sampled voltage and current, and converting said calculations and said digitally sampled voltage and current into at least one network protocol; and  
a network interface for interfacing with an external network;  
wherein said network protocol is one of e-mail, File Transfer Protocol (FTP), Hypertext Transfer Protocol (HTTP) or Dynamic Host Configuration Protocol (DHCP).
11. The electric power meter of claim 10, wherein a web server provides data to the network interface in Hypertext Markup Language (HTML) or Extensible Markup Language (XML) format.
12. The electric power meter of claim 10, further comprising:  
an external device interface for connecting an external device to said electric power meter, wherein said external device transmits packet data to said electric power meter to be processed by the processor and provided through said network interface.
13. The electric power meter of claim 10, wherein said network interface supports multiple users simultaneously.

14. The electric power meter of claim 10, wherein said network interface supports Ethernet communications.
15. An electric power meter, comprising:
  - a digital sampler for digitally sampling voltage and current;
  - a memory for storing said digitally sampled voltage and current;
  - at least one processor for performing power calculations on said digitally sampled voltage and current, and converting said calculations and said digitally sampled voltage and current into at least one network protocol; and
  - a network interface for interfacing with an external network;wherein a web server provides data to the network interface in Hypertext Markup Language (HTML) or Extensible Markup Language (XML) format.
16. The electric power meter of claim 15, further comprising:
  - an external device interface for connecting an external device to said electric power meter, wherein said external device transmits packet data to said electric power meter to be processed by the processor and provided through said network interface.
17. The electric power meter of claim 15, wherein said network interface supports multiple users simultaneously.
18. The electric power meter of claim 15, wherein said network interface supports Ethernet communications.
19. An electric power meter having a digital sampler for sampling a voltage and a current at a sampling point and having a processor for processing at least one of the sampled voltage and the current, comprising:
  - a memory for storing network protocol conversion algorithms; and
  - a network interface;wherein said processor performs at least one power calculation and converts at least one of the sampled voltage, the sampled current and the power calculation to at least one network protocol using one of said network protocol conversion algorithms, said at least one network protocol provided through said network interface; wherein said network protocol is one of e-mail, File Transfer Protocol (FTP),

Hypertext Transfer Protocol (HTTP) or Dynamic Host Configuration Protocol (DHCP).

20. The electric power meter of claim 19, wherein a web server provides data to the network interface in Hypertext Markup Language (HTML) or Extensible Markup Language (XML) format.
21. The electric power meter of claim 19, further comprising:  
an external device interface for connecting an external device to said electric power meter, wherein said external device transmits packet data to said electric power meter to be processed and provided to said user through said network interface.
22. The electric power meter of claim 19, wherein said network interface supports multiple users simultaneously.
23. The electric power meter of claim 19, wherein said network interface is an Ethernet interface.
24. An electric power meter having a digital sampler for sampling a voltage and a current at a sampling point and having a processor for processing at least one of the sampled voltage and the current, comprising:  
a memory for storing network protocol conversion algorithms; and  
a network interface;  
wherein said processor performs at least one power calculation and converts at least one of the sampled voltage, the sampled current and the power calculation to at least one network protocol using one of said network protocol conversion algorithms, said at least one network protocol provided through said network interface;  
wherein a web server provides data to the network interface in Hypertext Markup Language (HTML) or Extensible Markup Language (XML) format.
25. The electric power meter of claim 24, further comprising:  
an external device interface for connecting an external device to said electric power meter, wherein said external device transmits packet data to said electric power meter to be processed and provided to said user through said network interface.
26. The electric power meter of claim 24, wherein said network interface supports multiple users simultaneously.

27. The electric power meter of claim 24, wherein said network interface is an Ethernet interface.
28. A system for modifying the functionality of the electric power meter of claim 24 previously installed in the field and operating, the system comprising:  
a server computer, the electric power meter in communication with the server computer over a network, the electric power meter operated with a software configuration stored therein; and  
a storage device in communication with the server computer, the storage device comprising a database, wherein a copy of the software configuration is stored in the database, the server is operable to modify the operation of the electric power meter as a function of modifications to the database.
29. The system of claim 28 wherein the server computer comprises a network server operatively communicating with a master server, the network server operable to generate display pages to create a virtual meter site and the master server operable to maintain the database.
30. The system of claim 28, wherein the server computer comprises an intelligent electronic device operatively communicating over the network.
31. The system of claim 28, further comprising a browser coupled to the server computer, the browser operable to access the database.
32. The system of claim 28, wherein the software configuration comprises firmware and frameworks.
33. The system of claim 32, wherein the server is operable to perform modifications to the firmware and frameworks as a function of selections lists selectable by a user.
34. The system of claim 33, wherein said electric power meter is operative to contact a second server to authorize payment for said modifications.
35. The system of claim 28, wherein the network comprises an Intranet.
36. The system of claim 28, wherein the network comprises an Internet Protocol based network.

37. The system of claim 28, wherein the electric power meter comprises a watt-hour meter.
38. The system of claim 28, wherein the software configuration is stored in said memory and said memory comprises volatile memory and non-volatile memory, wherein a first portion of the software configuration is stored in the non-volatile memory and a second portion of the software configuration is stored in the volatile memory.
39. The system of claim 38, wherein the second portion of the software configuration is transferable over the network from the database to the electric power meter as a function of instructions within the first portion of the software configuration.
40. The system of claim 38, wherein the server is operable to modify the operation of the electric power meter with an update transferable over the network to the electric power meter.
41. The system of claim 40, wherein the update comprises a modified software configuration.
42. The system of claim 40, wherein the update comprises a modification to the software configuration.
43. The system of claim 40, wherein the update comprises an enabling mechanism.
44. The system of claim 40, wherein the update comprises an email message.
45. The system of claim 40, wherein the update comprises a datafile.
46. An IED comprising:
  - an analog to digital converter operative to sense analog signals indicative of voltage and current in at least one conductor of a power system and produce digital signals indicative of said analog signals;
  - a CPU coupled with said analog to digital converter and operative to process said digital signals to produce electrical parameters;
  - a memory coupled to said CPU and operative to store said electrical parameters;
  - a communications circuit coupled to said CPU and coupleable to a network;
  - wherein said CPU is operative to transfer said electrical parameters through said

communications circuit to said network using at least one of Hypertext Markup Language (HTML) and Extensible Markup Language (XML) format.

47. The IED of claim 46 wherein said IED comprises an electronic power meter.
48. An IED comprising:
  - an analog to digital converter operative to sense analog signals indicative of voltage and current in at least one conductor of a power system and produce digital signals indicative of said analog signals;
  - a CPU coupled with said analog to digital converter and operative to process said digital signals to produce electrical parameters;
  - a memory coupled to said CPU and operative to store said electrical parameters;
  - a communications circuit coupled to said CPU and coupleable to a network;
  - wherein said CPU is operative to transfer said electrical parameters through said communications circuit to said network using at least one of FTP, SOAP, Mime, HTTP, HTTPS, PPP, or SMTP protocols.
49. The IED of claim 48 wherein said IED comprises an electronic power meter.